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PROPOSAL FOR TESTS OF WETTING AGENTS FOR DUST SUPPRESSION ON SULPHIDE ORES

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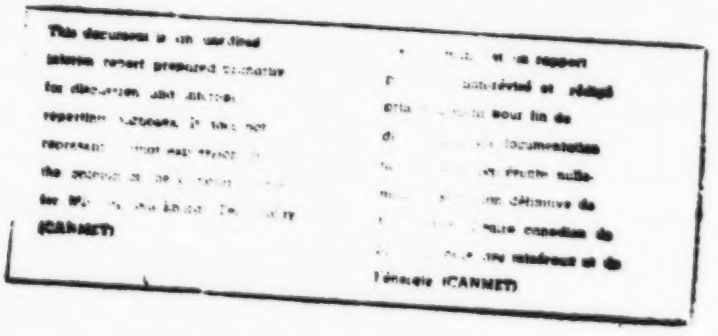

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MICROMEDIA

Proposal for Tests of Wetting Agents for Dust Suppression on Sulphide ores

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ABSTRACT

Studies on the use of wetting agents to improve dust control on sulphide ores are proposed. This proposal follows laboratory studies in which it was shown that interference can be expected if flotation is used in beneficiation and that this interference could be controlled by an extra stage in ore preparation.

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KEYWORDS: dust control, rock loading, wetting agents, sulphide ores

Proposition relative à des essais d'agents mouillants destinés au dépoussiérage des minerais sulfurés

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RÉSUMÉ

On propose des études sur l'utilisation d'agents mouillants pour améliorer le dépoussiérage des minerais sulfurés. Cette proposition fait suite à des études de laboratoire dans lesquelles on a montré que des perturbations sont prévisibles si la flottation est utilisée pour l'enrichissement et que ces perturbations pourraient être éliminées par l'introduction d'une étape supplémentaire dans la préparation du minerai.

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MOTS CLéS : dépoussiérage, chargement des roches, agents mouillants, minerais sulfurés.

BACKGROUND

Wetting rock surfaces to bind fine dust is a major dust control procedure in most mines(1). Sulphide minerals are difficult to wet and it is probable that the full potential of wetting cannot be obtained with water alone on sulphide ores. The use of wetting agents to improve their wetting capabilities and to improve dust control has been under consideration for a number of years(2). With many sulphide ores flotation is used as a beneficiation process, and the possible interference of wetting agents used in dust control with surface-active agents used for flotation has prevented experimentation. A laboratory study has demonstrated that such interference does occur but that this could be controlled by an extra step in the mill process. It was also shown that an experiment could be carried out on a small fraction of the ore being processed in a mill without the extra step and without significant loss of ore values. Such an experiment would permit an evaluation of the possible benefits of wetting agent use for dust control in sulphide ore mines(3,4).

RESEARCH OBJECTIVES

The specific objective of this study is to develop technology to reduce the of airborne dust dispersed while handling sulphide ores in all stages of mining; loading ,transportation, etc.

TECHNICAL APPROACH

This preliminary study is intended to establish whether wetting agents can be effectively used for dust control with sulphide ores and what conditions ,such as wetting times, are suitable. It is expected that further specialized tests will be required related to their integration into the mining system. A parametric study of dust control is proposed with water, wetting agent solution and a range of wetting times as parameters. The specific site chosen for the tests in a sulphide ore mine would have good control of the ventilation and the loading operation. The most suitable sites in previous studies were found to be headings being driven in ore using forced ventilation(5). The heading must be sufficiently long to permit adequate mixing of dust and air. The ventilation tube also has to be in good condition i.e. a minimum of leaks. The suggested range of wetting times for the first tests would be 1 to 24 hours using a geometric progression such as 1,3,8,24. The concentration of wetting agent would be 1 to 2 % active agent in water.

ANTICIPATED BENEFITS

A substantial reduction in dust dispersion from sulphide ores during loading is anticipated as the result of using a suitable wetting agent.

ESTIMATED COSTS

1. Capital equipment	$ 1 000
2. Supplies	2 000
3. Personnel—It is estimated the project will have a six months duration	
a. Project engineer– part time at $40 000/year	4 000
b. Technician– part time at $30 000/year	6 000
4. Technical support 1 or 2 visits by CANMET/MRL personnel	2 000
The total cost of this project is estimated to be	$ 15 000

WORK PLAN

The project, as described, will require approximately 6 months for completion. If approved, it is proposed that the work should proceed as outlined earlier. The detailed order of the tests should be modifiable according to the results achieved and the availability of resources. If successful it is expected that this study will be followed by other studies to permit assimilation of the developed technology into the mining operation as well as to expand the understanding of dust control from sulphide ores.

TECHNOLOGY TRANSFER

The results will be published and made available to the Canadian mining industry.

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